Books received

Switching theory in space technology edited by H. Aiken and W. F. Main. Oxford University Press, 1963. 357 pp. £4 12s.

Lasers and applications edited by W. S. C. Chang. Ohio State University, 1963. 267 pp. no price

Error propagation for difference methods by P. Henrici. John Wiley, 1963. 73 pp. £1 18s.

Energy by P. Sporn. Pergamon Press, 1963. 69 pp. 12s. 6d.

Directory of opportunities for qualified men 63/4. Cornmarket Press, 1963. 157 pp. gratis

Dictionnaire de la technique de la commutation et des transformateurs. Paris, Dunod, 1962. 614 pp. 45F

Introduction to microwave spectroscopy by T. L. Squires. Newnes, 1963. 140 pp. 30s.

Aircraft instrumentation control systems by C. A. Williams. London, Odhams, 1963. 320 pp. £2 5s.

Fuel cells—Vol. 2 edited by G. J. Young. New York, Reinhold, 1963. 225 pp. £3 4s.
Proceedings of a symposium on fuel cells held in Chicago in 1959 by the American Chemical Society.

Microwave tubes and semiconductor devices by G. D. Sims and I. M. Stephenson. London, Blackie, 1963. 388 pp. £3 15s.

The OECD. Paris, 1963. 254 pp. no price

Transistor television receivers by T. D. Towers. London, Iliffe, 1963. 194 pp. £2 15s.

OBITUARY

ALFRED CECIL EBORALL

Alfred Cecil Eborall, M.I.C.E. (S. 1894, A. 1896, M. 1901), who died on the 2nd August 1963 at the age of 87, received his technical education at the City and Guilds Technical College under Prof. Sylvanus P. Thompson and J. Perry and his workshop training in the Swiss works of the Brown Boveri Co. He was actively associated with this company for 40 years, during which time he became managing director of the British subsidiary company. He was also a director of Bruce Peebles. In the early years of the century, Eborall did much to assist what was then—in the days of single-phase and d.c. supply—a new development in heavy electrotechnics, namely the design and operation of polyphase machinery and apparatus.

He was awarded a Student Premium in 1895, the Fahie Premium in 1901 and an Extra Premium in 1904 and had several papers published in the *Journal*.

GEORGE WESTBROOK EDWARD

George Westbrook Edward (S. 1910, A.M. 1915, M. 1943), who retired as director of the Morgan Crucible Co. in 1958 after 45 years' service, died on the 16th May 1963 at the age of 76. He received his engineering training at the Manchester Municipal School of Technology and his practical training with the Antwerp Engineering Co., Belgium, and the British Westinghouse Electric and Manufacturing Co. Edward started his long association with the Morgan Crucible Co. in the capacity of sales representative in France. A few years later he was appointed manager of the New York company. He remained in America until 1927, when he returned to London on his appointment to the board. He gave up his executive duties in 1948 but remained a member of the board for a further ten years. C. W. S.

BRIAN STEPHEN GOSSLING

Brian Stephen Gossling, M.A. (M. 1947), who died on the 26th July 1963, aged 72, earned wide recognition for his early work on large transmitting valves, especially for his publications on field emission and vacuum-arc breakdown. He was associated with the development of valves for radar as early as 1938 and more recently became involved in biological studies of electrical methods of sterilising bacteria. He was one of the founder members of the research laboratories of the General Electric Co. (now the Hirst Research Centre), which he joined after two years with the Cavendish Laboratory on a Trinity Scholarship and five years with the Admiralty in the First World War. During his working life, neither his great fund of ideas nor his kindness to junior members of the staff ever failed. He leaves a widow and five grown-up children.

He was awarded the Duddell Premium in 1921 and a Wireless Premium in 1932 and had several papers published in the *Journal*.

O. W. H.

ALEXIS RENÉ GRENFELL

Alexis René Grenfell, B.SC.(ENG.) (A.M. 1947, M. 1953), who died on the 20th July 1963, was born on the 20th August 1904. He was educated at the Polytechnic Secondary School, Regent Street, London, and received his engineering training at the City and Guilds College, London University. In 1929 he joined Standard Telephones and Cables, where he was engaged on the design and development of telephone transmission apparatus. In 1935 he was appointed senior engineer in the research department of E.M.I. and worked on television transmission research and development, during which time he had several inventions patented. In 1940 Grenfell became a scientific officer in the Ministry of Aircraft Production, working on radar at Farnborough and Malvern. Part of this time was spent as a representative in south-east Asia and Africa in charge of a group of radar specialists. He joined Vickers-Armstrong at Crayford in 1947 as chief electronics engineer, responsible for electronic development and production techniques, and, from 1959 up to the time of his death, he was associated with the Sperry Gyroscope Co.

He was a quiet and unassuming man and a capable and conscientious engineer. His life was devoted to his work, and he leaves many friends in the electrical world. He is survived by his widow, a son and a daughter. D. W. H.

RICHARD LESLIE HUGHES

Richard Leslie Hughes, B.SC. (A.M. 1927, M. 1941), who died on the 2nd June 1963, was born on the 11th July 1894. He was educated at Shrewsbury School and the University of Birmingham, where he studied civil engineering. After wartime service in the Royal Navy, he joined the consulting engineering firm of Clark, Ford and Taylor in 1920 and was closely associated with the design of several new submarine telegraph cables laid during the 1920s. In 1928 he joined a team set up to study the practicability of a transatlantic telephone cable. When this project went into abeyance during the recession of the early 1930s, his interests gradually widened to include other types of cable system. The Second World War saw him back in Admiralty service, and the postwar period up to his retirement was spent in the patent department of Standard Telephones and Cables.

Hughes travelled extensively and read widely, which made him a very interesting companion, always ready for friendly discussion on almost any subject. He is survived by his widow. A. L. L.

EDWIN HARTREE RAYNER

Edwin Hartree Rayner, M.A., SC.D., (A.M. 1905, M. 1911) died at his home in Teddington on the 20th June 1963 at the age of 88. Rayner read natural sciences at Cambridge University and, after some experience in industry, joined the scientific staff of the National Physical Laboratory in 1904, remaining there until his retirement in 1940. He was one of the pioneer scientists who developed what became the electricity division of the laboratory, with its facilities for precision measurement, standardisation and research over a wide range of frequency, voltage and power. He had a charming and unassuming personality with a good sense of humour and was always ready to give advice and encouragement to younger scientists. He studied Latin and Greek at Shrewsbury School and continued to read both for pleasure in his later years.

He was the author, solely or jointly, of a number of papers published by the Institution, including one on the basic electrostatic system of measurement used for much of the electrotechnical standardising work at the N.P.L. He was awarded the Institution Premium in 1905, the Kelvin Premium in 1912 and 1913 and the Silvanus P. Thompson Premium in 1930. R. L. S.-R.

JAMES ERNEST SHAW

The sudden death of James Ernest Shaw, O.B.E., M.SC., F.INST.P. (A.M. 1929, M. 1939), on the 12th July 1963 at the age of 62, was a great shock to all his friends and colleagues. He graduated in 1922 from Queen's University, Belfast. His working life was spent in the Admiralty Scientific Service, which he joined in 1926. He was with the Admiralty engineering laboratory until 1940 and in the electrical engineering department of the Admiralty until 1948; he made valuable contributions to many problems in connection with warship electrical engineering, his main efforts being concerned with mechanical shock in ships. In 1948 he moved to the Naval Construction Research Establishment to take charge of the division on shock, noise and vibration.

Shaw was a pleasant personality, a loyal colleague and a valued friend. He was also a keen golfer and an accomplished organist. He is survived by his widow and two daughters.

W. C. M. C.